

CLAIMS

1 1. A method of adjusting the two-way communication range of an RFID system to permit a person to
2 individually handle and interrogate each one of a plurality of tagged objects, each tagged object having
3 an RFID tag transceiver, comprising the steps of:

4 mounting on the person an RFID interrogator transceiver having an antenna;

5 mounting on each tagged object an RFID tag transceiver, wherein

6 each tag transceiver is characterized by a set of one or more performance parameters
7 which control a reliable two-way communications range between that tag transceiver and the
8 interrogator transceiver, and

9 the interrogator transceiver is characterized by a set of one or more performance
10 parameters which control the reliable two-way communications range between the interrogator
11 transceiver and any of the tag transceivers; and

12 adjusting at least one of the performance parameters so that the reliable two-way
13 communications range between the interrogator transceiver and the tag transceiver of each of the tagged
14 objects slightly exceeds the closest distance, during times when the person handles that tagged object,
15 between the antenna of the interrogator and the tag transceiver mounted on that tagged object.

1 2. A method according to claim 1, wherein the adjusting step further comprises adjusting said at least
2 one of the performance parameters so that said reliable two-way communications range is short enough
3 so that, when the person handles a tagged object, no other tagged object being handled by any other
4 person is within reliable two-way communication range of the interrogator.

1 3. A method according to claim 1, wherein the adjusting step further comprises adjusting said at least
2 one of the performance parameters so that said reliable two-way communications range is short enough
3 so that, when the person handles a tagged object, no other tagged object is within reliable two-way
4 communication range of the interrogator.

1 4. A method according to claim 3, wherein the adjusting step further comprises adjusting said at least
2 one of the performance parameters so that said reliable two-way communications range is short enough
3 so that, when the person handles a tagged object, no other tagged object is within either reliable or
4 unreliable two-way communication range of the interrogator.

1 5. A method according to claim 1, wherein:

2 the performance parameters of each tag transceiver include a receiver sensitivity of the tag

transceiver;

the performance parameters of the interrogator transceiver include a receiver sensitivity of the interrogator transceiver and a transmitter output power of the interrogator transceiver; and

the adjusting step includes adjusting at least one of the receiver sensitivity of the tag transceiver, the receiver sensitivity of the interrogator transceiver, and the transmitter output power of the interrogator transceiver.

6. A method according to claim 1, wherein each tag transceiver is a modulated backscatter transceiver.

7. A method according to claim 1, further comprising the steps of:

the interrogator transceiver transmitting an interrogation message while the person is close enough to a tagged object for the antenna of the interrogator transceiver and that tagged object's transceiver to be within the communications range;

the transceiver of that tagged object transmitting, in response to the interrogation message, an identification message containing data identifying that tagged object; and

the interrogator transceiver receiving the identification message and presenting the data to said person.

8. A method of adjusting the two-way communication range of an RFID system to permit a person to individually handle and interrogate each one of a plurality of tagged objects, each tagged object having an RFID tag transceiver, comprising the steps of:

mounting adjacent the person an RFID interrogator transceiver having an antenna;

mounting on each tagged object an RFID tag transceiver, wherein

each tag transceiver is characterized by a set of one or more performance parameters which control a reliable two-way communications range between that tag transceiver and the interrogator transceiver, and

the interrogator transceiver is characterized by a set of one or more performance parameters which control the reliable two-way communications range between the interrogator transceiver and any of the tag transceivers; and

adjusting at least one of the performance parameters so that the reliable two-way communications range between the interrogator transceiver and the tag transceiver of each of the tagged objects only slightly exceeds the closest distance, during times when the person handles that tagged object, between the antenna of the interrogator and that tagged object.

1 9. A method according to claim 8, wherein the step of mounting the interrogator transceiver further
2 comprises:

3 mounting the interrogator transceiver on the person so as to leave the hands of the person free
4 to grasp objects other than the interrogator transceiver.

1 10. An RFID interrogator apparatus having an adjustable two-way communication range so as to
2 permit a person to individually interrogate the closest one of a plurality of nearby tagged objects,
3 wherein each tagged object has a respective RFID tag transceiver attached thereto, comprising:

4 an RFID interrogator transceiver characterized by a set of one or more performance parameters
5 which control a reliable two-way communications range between the interrogator transceiver and any
6 of the RFID tag transceivers;

7 an antenna which is connected to the interrogator transceiver and which is adapted for
8 mounting on a person; and

9 a control logic circuit, connected to the interrogator transceiver, for adjusting at least one of the
10 performance parameters so that the reliable two-way communications range between the interrogator
11 transceiver and the tag transceivers slightly exceeds the closest distance, during times when said
12 person handles a tagged object, between the antenna and the tag transceiver attached to that tagged
13 object.

1 11. Interrogator apparatus according to claim 10, wherein the control logic circuit adjusts said at least
2 one of the performance parameters so that said reliable two-way communications range is short enough
3 so that, when said person handles a tagged object, no other tagged object being handled by any other
4 person is within reliable two-way communication range of the interrogator transceiver.

1 12. Interrogator apparatus according to claim 10, wherein the control logic circuit adjusts said at least
2 one of the performance parameters so that said reliable two-way communications range is short enough
3 so that, when said person handles a tagged object, no other tagged object is within reliable two-way
4 communication range of the interrogator transceiver.

1 13. Interrogator apparatus according to claim 10, wherein:

2 the interrogator transceiver includes a receiver circuit having an adjustable sensitivity; and
3 said at least one performance parameter adjusted by the control logic circuit includes the
4 sensitivity of the receiver circuit.

1 14. Interrogator apparatus according to claim 10, wherein:

2 the interrogator transceiver includes a transmitter circuit having an adjustable output power; and
3 said at least one performance parameter adjusted by the control logic circuit includes the output
4 power of the transmitter.

1 15. An RFID tag having an adjustable two-way communication range so as to permit a person
2 operating an RFID interrogator transceiver to individually interrogate the tag without interrogating
3 other RFID tags which are more distant from the interrogator transceiver, comprising:

4 an RFID tag transceiver adapted for attachment to a tagged object, wherein the tag transceiver is
5 characterized by a set of one or more performance parameters which control a reliable two-way
6 communications range between the tag transceiver and any RFID interrogator transceiver; and
7 a control logic circuit, connected to the tag transceiver, for adjusting at least one of the
8 performance parameters so that the reliable two-way communications range between the tag transceiver
9 and any interrogator transceiver slightly exceeds the closest distance, during times when said person
10 handles a tagged object to which the tag transceiver is attached, between said interrogator transceiver
11 and the tag transceiver.

1 16. A tag according to claim 15, wherein the control logic circuit adjusts said at least one of the
2 performance parameters so that said reliable two-way communications range is short enough so that,
3 when said person handles the tagged object to which the tag transceiver is attached, no other tagged
4 object being handled by any other person is within reliable two-way communication range of the
5 interrogator transceiver.

1 17. A tag according to claim 15, wherein the control logic circuit adjusts said at least one of the
2 performance parameters so that said reliable two-way communications range is short enough so that,
3 when said person handles the tagged object to which the tag transceiver is attached, no other tagged
4 object is within reliable two-way communication range of the interrogator transceiver.

1 18. A tag according to claim 15, wherein:

2 the tag transceiver includes a receiver circuit having an adjustable sensitivity; and
3 said at least one performance parameter adjusted by the control logic circuit includes the
4 sensitivity of the receiver circuit.

1 19. An RFID system having an adjustable two-way communication range so as to permit a person to
2 individually interrogate the closest one of a plurality of nearby tagged objects, comprising:
3 a plurality of tagged objects, wherein each tagged object includes a respective RFID tag
4 transceiver attached thereto;
5 an RFID interrogator transceiver characterized by a set of one or more performance parameters
6 which control a reliable two-way communications range between the interrogator transceiver and any
7 of the RFID tag transceivers;
8 an antenna which is connected to the interrogator transceiver and which is adapted for
9 mounting on a person; and
10 a control logic circuit, connected to the interrogator transceiver, for adjusting at least one of the
11 performance parameters so that the reliable two-way communications range between the interrogator
12 transceiver and the tag transceivers slightly exceeds the closest distance, during times when said
13 person handles a tagged object, between the antenna and the tag transceiver attached to that tagged
14 object.

1 20. A system according to claim 19, wherein the control logic circuit adjusts said at least one of the
2 performance parameters so that said reliable two-way communications range is short enough so that,
3 when said person handles a tagged object, no other tagged object being handled by any other person is
4 within reliable two-way communication range of the interrogator transceiver.

1 21. A system according to claim 19, wherein the control logic circuit adjusts said at least one of the
2 performance parameters so that said reliable two-way communications range is short enough so that,
3 when said person handles a tagged object, no other tagged object is within reliable two-way
4 communication range of the interrogator transceiver.

1 22. A system according to claim 19, wherein:
2 the interrogator transceiver includes a receiver circuit having an adjustable sensitivity; and
3 said at least one performance parameter adjusted by the control logic circuit includes the
4 sensitivity of the receiver circuit.

1 23. A system according to claim 19, wherein:
2 the interrogator transceiver includes a transmitter circuit having an adjustable output power; and
3 said at least one performance parameter adjusted by the control logic circuit includes the output
4 power of the transmitter.

1 24. An RFID system having an adjustable two-way communication range so as to permit a person to
2 individually interrogate the closest one of a plurality of nearby tagged objects, comprising:
3 an RFID interrogator transceiver having an antenna adapted for mounting on a person; and
4 a plurality of RFID tags, each tag being adapted for attachment to a tagged object, wherein each
5 tag includes
6 an RFID tag transceiver which is characterized by a set of one or more performance
7 parameters which control a reliable two-way communications range between the tag transceiver and the
8 RFID interrogator transceiver, and
9 a control logic circuit, connected to the tag transceiver, for adjusting at least one of the
10 performance parameters so that the reliable two-way communications range between the tag transceiver
11 and the interrogator transceiver slightly exceeds the closest distance, during times when said person
12 handles a tagged object to which said RFID tag is attached, between said interrogator transceiver and
13 ~~the tag transceiver of said RFID tag.~~

1 25. ~~A system according to claim 24, wherein the control logic circuit of each RFID tag adjusts said at~~
2 ~~least one of the performance parameters so that said reliable two-way communications range is short~~
3 ~~enough so that, when said person handles the tagged object to which said RFID tag is attached, no~~
4 ~~other tagged object being handled by any other person is within reliable two-way communication range~~
5 ~~of the interrogator transceiver.~~

1 26. ~~A system according to claim 24, wherein the control logic circuit of each RFID tag adjusts said at~~
2 ~~least one of the performance parameters so that said reliable two-way communications range is short~~
3 ~~enough so that, when said person handles the tagged object to which said RFID tag is attached, no~~
4 ~~other tagged object is within reliable two-way communication range of the interrogator transceiver.~~

1 27. ~~A system according to claim 24, wherein:~~
2 ~~the tag transceiver of each RFID tag includes a receiver circuit having an adjustable sensitivity;~~
3 ~~and~~
4 ~~said at least one performance parameter adjusted by the control logic circuit of each RFID tag~~
5 ~~includes the sensitivity of the receiver circuit of that RFID tag.~~